Speech and Language Disorders

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Goals

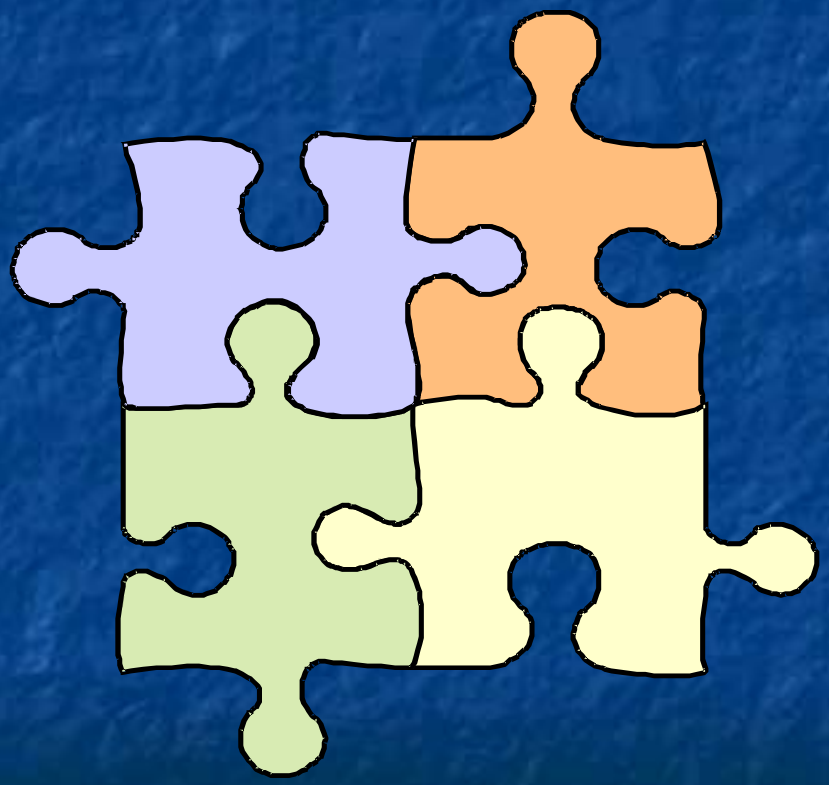
- Review the basics of speech and language
- Review normal developmental milestones for speech and language
- Assessing speech delay
- Managing speech delay
- Assessing and managing stuttering

Speech and Language

- **Speech** is the motor act of communicating by articulating verbal expression
- **Language** is the knowledge of a symbol system used for interpersonal communication.

Four domains of language

- Phonology
- Grammar
- Semantics
- Pragmatics



Phonology

- **The ability to produce and discriminate the specific sounds of a given language.**
- Its unit, the phoneme, is characterized by distinctive features.
- Babies start discriminating phonemes during the first few months of life, and they produce them soon after.

Phonology

- Phonological receptivity is pluripotential at birth
- Starts to decay at around 10 months
- Reaches a rather general inability to acquire native phonology by preadolescence

Phonology

- Stress and prosody
- Aspects of phonology
- May determine meaning in Chinese or emotional tone in English.

Grammar

- **The underlying rules that organize any specific language.**
- The combinatorial rules that most native speakers of a language recognize as acceptable for that language and that allow a native speaker an infinite array of generative possibilities.

Grammar

- Composed of both morphology and syntax.

Semantics

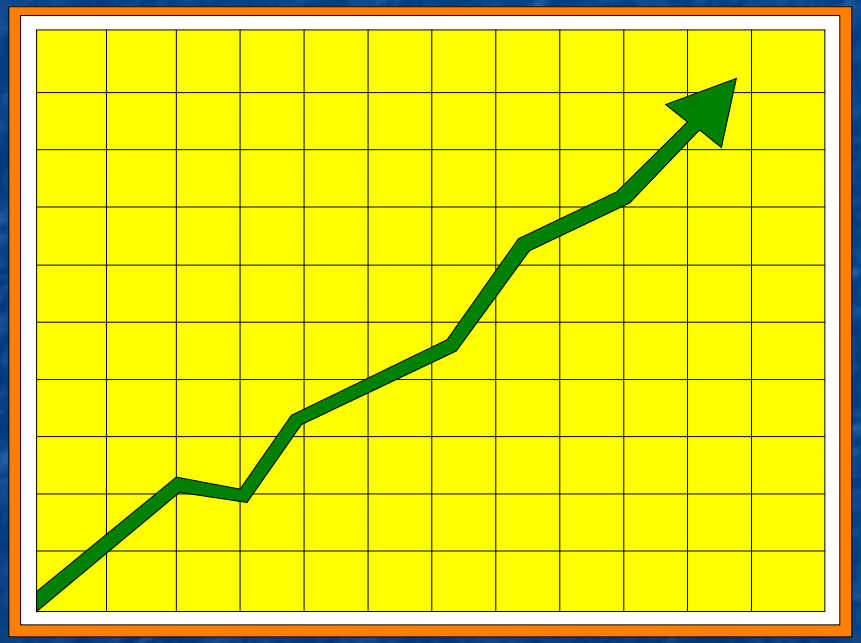
- **The study of meaning**
- Includes the study of vocabulary (lexicon).

Lexicon

- Lexical entries are organized in the mental dictionary according to well-defined rules
- Allows the young child to acquire a peak average of 10 new words per day.
- By 24 months the average child knows 50 words.

Lexicon Growth

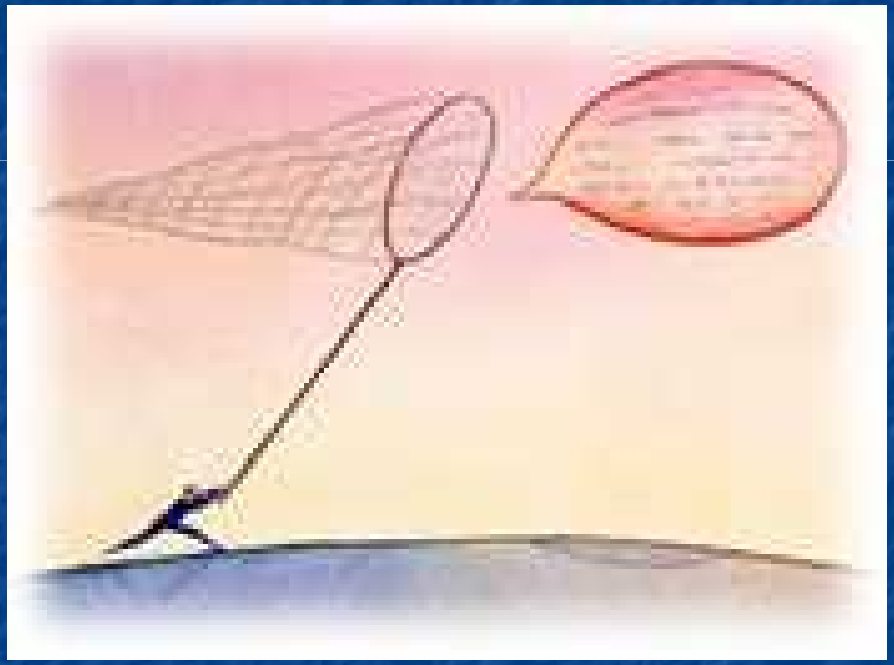
- The subsequent exponential growth makes it difficult to determine vocabulary size with exactitude.



Environmental factors predicting large vocabularies

- Reading and discussing children's stories
- The quality of dinner table conversations
- Large mother-produced number of words
- Higher socioeconomic status (SES)
- Being the firstborn (Hoff-Ginsberg, 1998)
- Quantity and sophistication of mother's vocabulary (Snow, 1998).

Pragmatics



- A number of sub-domains reflecting communicative competence.

Sub domains of Pragmatics

- Rules of conversation (turn-taking, topic maintenance, conversational repair)
- Politeness
- Narrative and extended discourse
- The implementation of communicative intents

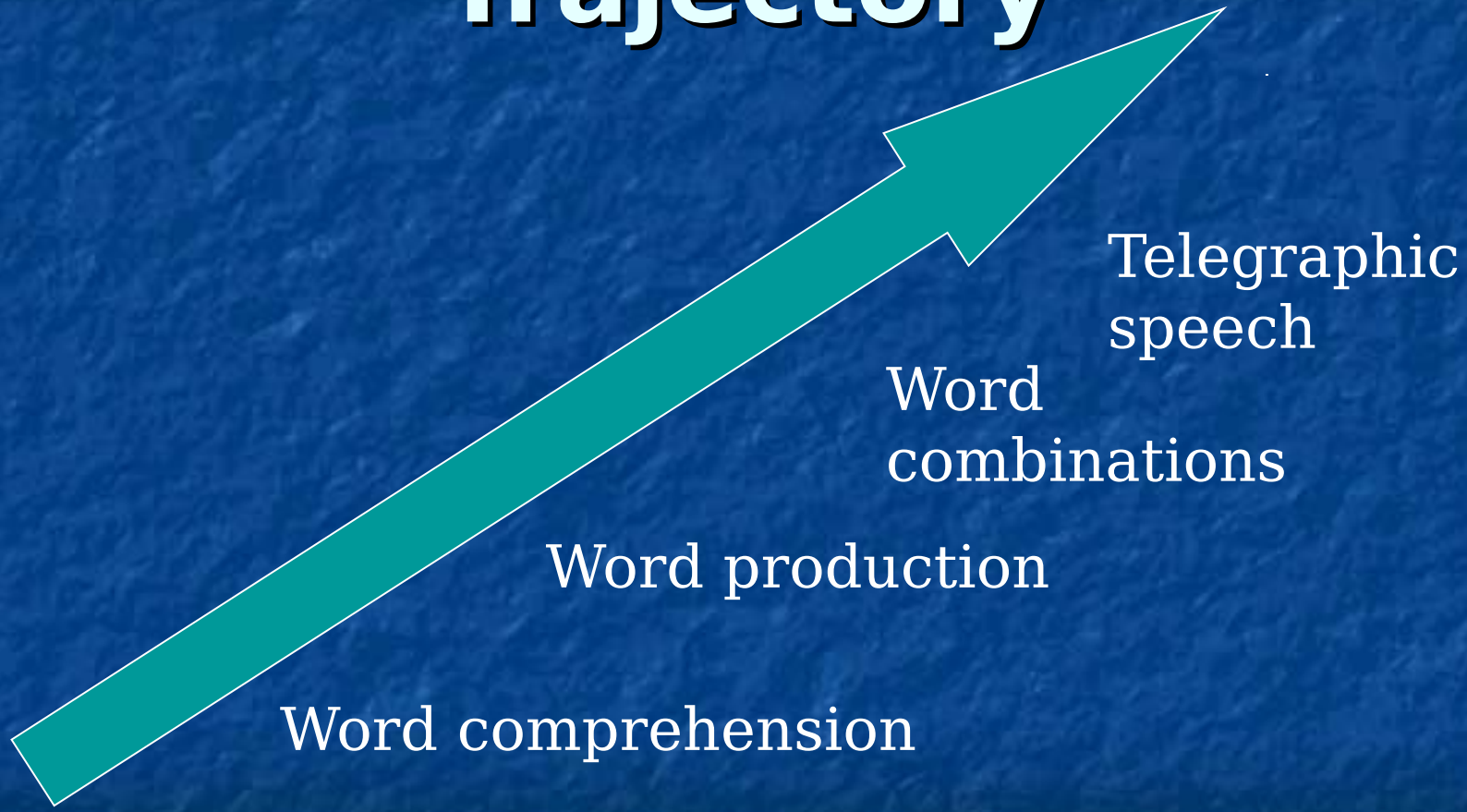
Pragmatic disorders

- Little variety in language use
- May say inappropriate or unrelated things during conversations
- May tell stories in a disorganized way
- Can often make demands, ask questions, and greet people
- Has trouble organizing language to talk about what happened in the past.

Pragmatic disorders

- Appear to pull topics out of the air
- May not use statements that signal a change in topic, such as "That reminds me."
- Peers may avoid having conversations with such a child.
- Can lower social acceptance.

Language Developmental Trajectory



- By age 3, most normal children have mastered the basic morphosyntactic structures of their native language

Language acquisition

- Occurs with uniformity and rapidity
- Supports the hypothesized existence of innate, genetically determined Universal Grammars
- Recently proposed a combination of traditional learning and innate language modules.

The Problem

- Broad range
- Variation in language achievement
- Criteria-based definitions of abnormal development and disorder

Etiology of Speech & Language Disorders

- Mental retardation
- Hearing loss
- Maturation delay (developmental language delay)
- Expressive language disorder (developmental expressive aphasia)
- Bilingualism
- Psychosocial deprivation
- Autism
- Elective mutism
- Receptive aphasia
- Cerebral palsy

Normal Speech Development

Speech Delay

- Child's speech development is **significantly below** the norm for children of the same age.
- Speech development that is typical of a normally developing child of a younger chronologic age
- Skills are acquired in a normal sequence, but at a slower-than-normal rate

Epidemiology of Speech Delay

- Common childhood problem
- Affects 3 to 10 percent of children.
- 3-4X more common in boys than in girls.

Most common causes of speech delay

- *Mental retardation*
- *Hearing loss*
- *Maturation delay*

Mental retardation

- **The most common cause of speech delay**
- Accounts for more than 50 percent of cases.
- Global language delay
- Also delayed auditory comprehension and delayed use of gestures.

Mental retardation

- The more severe the mental retardation, the slower the acquisition of communicative speech.
- Speech development is relatively more delayed in mentally retarded children than are other fields of development.

Hearing Loss

- Intact hearing in the first few years of life is vital to language and speech development.
- Hearing loss at an early stage of development may lead to profound speech delay.

Sensorineural hearing loss

- Intrauterine infection
- Kernicterus
- Ototoxic drugs
- Bacterial meningitis
- Hypoxia
- Intracranial hemorrhage
- Pendred syndrome
- Waardenburg syndrome
- Usher syndrome
- Chromosomal abnormalities (e.g., trisomy syndromes).

Sensorineural Hearing Loss

- Most severe in the higher frequencies.

Conductive loss

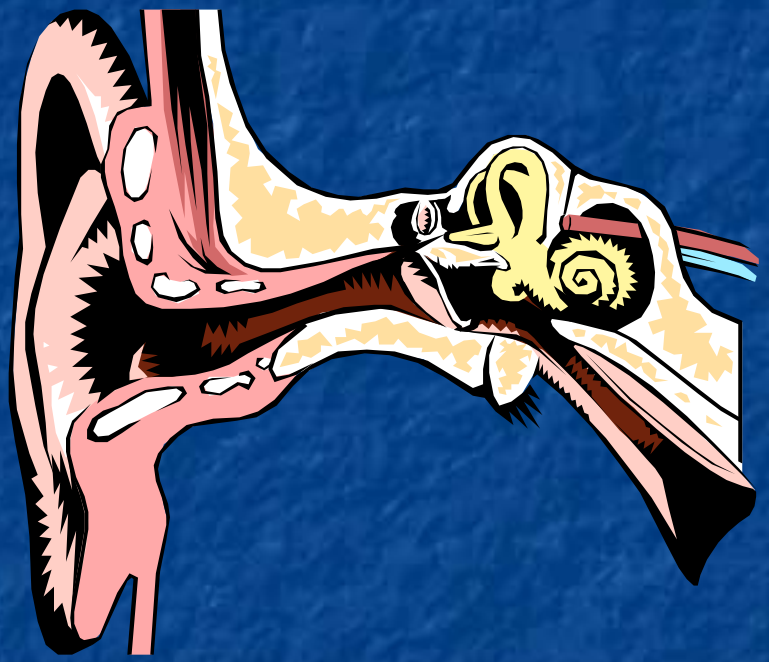
- Commonly caused by otitis media with effusion.
- Such hearing loss is intermittent and averages from 15 to 20 dB.

Otitis Media and Speech Delay

- Some studies have shown that children with conductive hearing loss are at risk for speech delay.
- Associated with middle ear fluid during the first few years of life
- **Not all** studies find this association.

Conductive Loss-Other Causes

- Malformations of the middle ear structures
- Atresia of the external auditory canal.



MATURATION DELAY (Developmental language delay)

- Delay occurs in the maturation of the central neurologic process required to produce speech.
- More common in boys
- Family history of "late bloomers" is often present.

MATURATION DELAY

- Prognosis is excellent
- Usually have normal speech development by the age of school entry.

EXPRESSIVE LANGUAGE DISORDER

(developmental expressive aphasia)

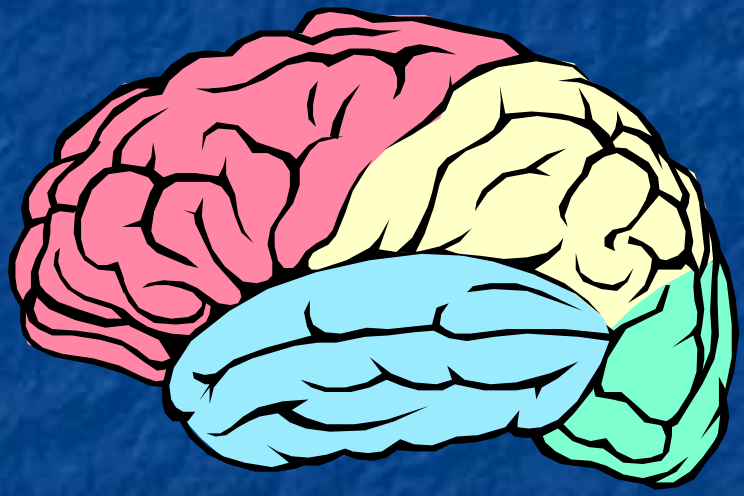
- Fail to develop the use of speech at the usual age.

EXPRESSIVE LANGUAGE DISORDER

- Normal intelligence
- Normal hearing
- Good emotional relationships
- Normal articulation skills.
- Comprehension of speech is appropriate to the age of the child

EXPRESSIVE LANGUAGE DISORDER

- Brain dysfunction that results in an inability to translate ideas into speech.



EXPRESSIVE LANGUAGE DISORDER

- The child is at risk for language-based learning disabilities (dyslexia).
- May use gestures to supplement their limited verbal expression .

Maturation Delay vs. Expressive Language Disorder?

- The late bloomer will eventually develop normal speech
- The child with an expressive language disorder will not do so without intervention.

Maturation Delay vs. Expressive Language Disorder?

- It is sometimes difficult, if not *impossible,* to distinguish at an early age a late bloomer from a child with an expressive language disorder.

BILINGUALISM

- A bilingual home environment may cause an *apparent* temporary delay in the onset of both languages.

BILINGUALISM

- The bilingual child's comprehension of the two languages is normal for a child of the same age.
- Usually becomes proficient in both languages before the age of five years.

Interference or transfer

- An English error due to the direct influence of the primary language structure.
- This is a normal phenomenon

Silent period

- Common second-language acquisition phenomenon
- Often very quiet, speaking little
- Focus on understanding the new language
- The younger the child, the longer the silent period tends to last.

Code switching

- Changing languages over phrases or sentences.
- Normal phenomenon

Benefits of Bilingualism

- Children who are fluent bilinguals actually outperform monolingual speakers on tests of metalinguistic skill.

Benefits of Bilingualism

- Our world is shrinking and business becomes increasingly international
- Children who are fluent bilingual speakers are potentially a tremendously valuable resource for the U.S. economy.

Stuttering

- Disorder of speech fluency that interrupts the forward flow of speech.
  - *All* individuals are disfluent at times
  - Differentiated by the kind and amount of the disfluencies

Characteristics-Repetition

- Sounds
  - b-b-b-ball
- Syllables
  - mo-mo-mommy
- Parts of words
  - basket-basket-basketball
- Whole words, and phrases

Characteristics- Prolongation

- Stretching, of sounds or syllables
  - r-----abbit

Characteristics

- Tense pauses, hesitations, and/or no sound between words

Characteristics

- Tense pauses, hesitations, and/or no sound between words
- Speech that occurs in spurts
  - as the child tries to initiate or maintain voice
- Variability in stuttering behavior
  - depending on the speaking situation

Related behaviors

- tense muscles in the lips, jaw, and/or neck
- tremor of the lips, jaw, and/or tongue
- foot tapping
- eye blinks
- head turns

Disfluencies in Children

- Almost all children go through a stage of frequent disfluency
  - usually between the ages of 2 and 5.
- Speech is produced easily in spite of the disfluencies.

Disfluencies in Children

- As children mature and sharpen their communication skills, these disfluencies typically disappear

Stuttering in Children

- Stuttering usually starts during this same time period
- May occasionally appear for the first time in a school-age child
- More rarely, in an adult.

When to Evaluate Stuttering

- Parental or medical concern about speech
- Disfluencies begin to occur more often
- Disfluencies begin to sound effortful or strained.

Evaluation of the Child with Speech and Language Problems

HISTORY

- A thorough developmental history
- Special attention to language milestones
- *Extremely* important in making the diagnosis.

When to be concerned?

- If the child is not babbling by the age of 12 to 15 months
- Not comprehending simple commands by the age of 18 months
- Not talking by two years of age

When to be concerned?

- Not making sentences by three years of age
- Is having difficulty telling a simple story by four to five years of age.

When to be concerned?

- If the child's speech is largely unintelligible after three years of age
- If the child's speech is more than a year late in comparison with normal patterns of speech development.

When to be concerned?

- Generalized delay in all aspects of developmental milestones

Physical Exam

- Accurate height, weight, and head circumference measurements
- A review of the growth chart

Physical Exam

- Any dysmorphic features or abnormal physical findings should be noted.
- Complete neurologic examination
- Vision and hearing evaluations.

The Early Language Milestone Scale

- Simple tool
- Can be used to assess language development in children under three years of age
- Focuses on expressive, receptive and visual language.

The Early Language Milestone Scale

- Relies primarily on the parents' report
- Occasional testing of the child.
- The test can be done in the physician's office
- Takes only a few minutes to administer

Peabody Picture Vocabulary Test-Revised

- Useful screening instrument for word comprehension.
- For children two and one-half to 18 years of age.

Peabody Picture Vocabulary Test-Revised

- If the child is bilingual, it is important to compare the child's language performance with that of other bilingual children of similar cultural and linguistic backgrounds.

The Denver Developmental Screening Test

- A comprehensive developmental assessment is essential
- The Denver is the most popular test in clinical use for infants and young children

More definitive testing

- Stanford-Binet Intelligence Scale
- Bayley Scales of Infant Development
- Wechsler Intelligence Scale for Children-Revised (WISC-R)
- Wechsler Preschool and Primary Scale of Intelligence (WPPSI).

More definitive testing

- Children whose results indicate an abnormal condition require with one of the standardized and validated tests of intelligence.

FURTHER DIAGNOSTIC EVALUATION

- **Audiometry**
  - For ALL Children with speech delay
- **Tympanometry**

FURTHER DIAGNOSTIC EVALUATION

- **Auditory brain-stem response** (ABER) provides a definitive and quantitative physiologic means of ruling out peripheral hearing loss.
- Especially useful in infants and uncooperative children
- Not affected by sedation or general anesthesia.

Questions?